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FEDERAL - STATE COOPERATIVE

SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

Montana and Northern Wyoming
Upper Missouri, Upper Columbia and Yellowstone Rivers

By
Division of Irrigation, Soil Conservation Service
United States Department of Agriculture
and
Montana Agricultural Experiment Station

In cooperation with the U. S. Forest Service, U. S. Geological Survey, National Park Service, U. S. Bureau of Reclamation, State Engineers of Montana and Wyoming and other Federal, State and local organizations.

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SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY
AND WATER SUPPLY FORECAST REPORTS:

Forecasts by U. S. Weather Bureau of total annual streamflow October-September, inclusive, at more than 300 gaging stations are issued monthly January through May in the publication WATER SUPPLY FORECASTS FOR THE WESTERN UNITED STATES.

Weather Bureau forecasts of runoff presented in this bulletin are computed from procedures based on mathematical analysis of the relation between precipitation and runoff.

The Weather Bureau bulletins may be secured by writing to:

Hydrologist in Charge
River Forecast Center
U. S. Weather Bureau
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Kansas City 6, Missouri

FEDERAL--STATE COOPERATIVE SNOW SURVEYS
AND
IRRIGATION WATER FORECASTS

FOR

MONTANA AND NORTHERN WYOMING

Upper Missouri and Upper Columbia River Basins

Report Prepared
by

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Montana Agricultural Experiment Station

Division of Irrigation
Soil Conservation Service

and

Montana Agricultural Experiment Station
Bozeman, Mont.

IRRIGATION WATER SUPPLY OUTLOOK
for 1953 Season

As of February 1, 1953

February first snow survey measurements made at a few key stations over the Upper Missouri and Upper Columbia River Basins in Montana indicate only a FAIR irrigation water supply for this season. Although the percentages of average water content are close to 100% in some cases, at all courses the soil under the snow is not frozen and is very dry under the surface. Consequently, considerable snow water will be required for soil priming, resulting in a smaller seasonal river discharge than indicated by the snow pack. The Missouri Basin shows approximately 97% of the average snow pack. Columbia Basin in Montana shows approximately 102% average snow pack.

Reservoir storage is slightly below average for this date. Precipitation throughout the season has been considerably below average, while January alone seems to be above average at stations in the west, with below average to the east.

JEFFERSON RIVER: Only two courses were measured at the upper end of this basin, and indicate about average conditions as compared to 1950 and 1948.

MADISON RIVER: Courses measured on this basin show approximately 92% average. However, courses in Idaho to the south are somewhat higher. It would appear from other basins that the 92% figure is more conservative.

GALLATIN RIVER: The Gallatin River Basin would indicate about the same as the Jefferson, only a little higher, but not above average and considerably below last season, which was well above average.

MISSOURI MAIN STEM: Courses on tributaries to the Missouri from Three Forks to Fort Benton show about an average snow pack, and considerably below last season. At Marias Pass, the snow pack is 105% of the February first average. Low elevation snow in the entire basin is entirely absent. There is no snow on the plains area to speak of at this time.

UPPER YELLOWSTONE RIVER: Snow surveys made at several places in Yellowstone Park indicate that the snow pack in this basin is about 95% average for the past seven or eight years.

LOWER YELLOWSTONE in WYOMING: All of the snow survey courses on the Upper Wind, Popo Agie and Big Horn were measured during the last week of January and indicate that the snow pack at high elevations above 8,000 is running about 85% average, while those courses between 8,000 and 7,000 are close to average or slightly above. Should this condition continue to exist

through April first, we could expect a large runoff early in the season with no reserve for the later part of the growing season. This condition could be rather serious to crops needing late irrigation.

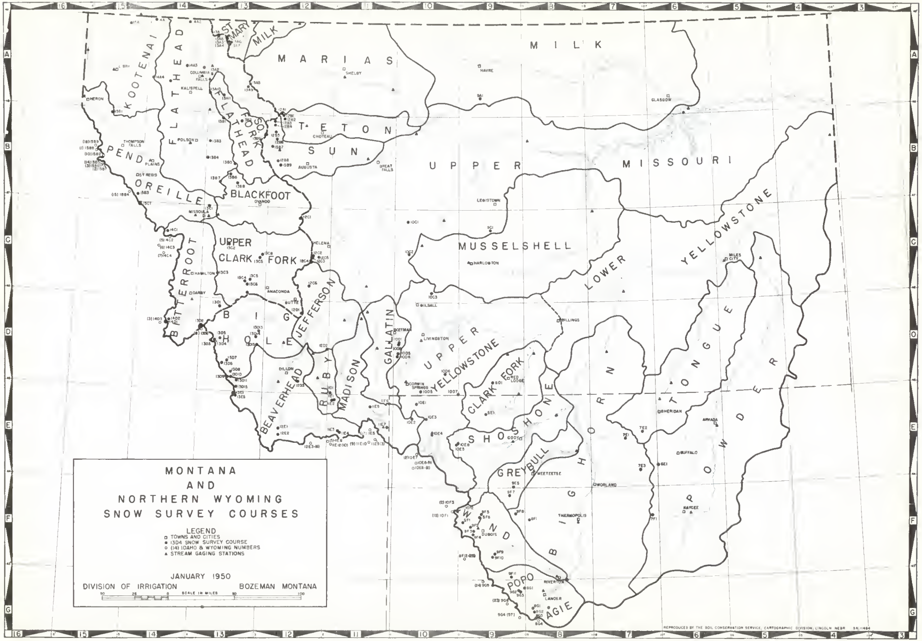
Valley precipitation for the entire season to date has been considerably below average up through December. January precipitation was above average over the Missouri and Yellowstone Basins. However, the accumulated totals to date are below normal.

COLUMBIA RIVER BASIN: Flathead River: Snow survey courses measured at a few key stations on the several tributaries to the Flathead River indicate that the snow pack this season is running about 90% average and about 41% of February 1st, 1952 for the same courses. The Upper Clark Fork Basin has a little more snow but still below average conditions exist here, and well below last season on February first. Precipitation at valley stations was considerably below average through December, but January has brought above average precipitation and the accumulated total to date is not too far below average.

The present outlook for this year's water is not too bad but not as good as last season on February 1st. With two months of winter before April first, there is some hope for a Fair water supply this season.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. Bennett, Chief

DIVISION OF RESEARCH
M. L. Nichols, Chief
Washington, D. C.



MONTANA
AND
NORTHERN WYOMING
SNOW SURVEY COURSES

LEGEND
□ TOWNS AND CITIES
● 13D4 SNOW SURVEY COURSE
○ (14) IDAHO & WYOMING NUMBERS
▲ STREAM GAGING STATIONS

JANUARY 1950

DIVISION OF IRRIGATION BOZEMAN MONTANA

SCALE IN MILES 50 25 0 50 100

REPRODUCED BY THE SOIL CONSERVATION SERVICE, CARTOGRAPHIC DIVISION, LINCOLN, NEBR. 5R 11464

INDEX TO MONTANA & NORTHERN WYOMING SNOW COURSES

MISSOURI RIVER DRAINAGE

Drainage Basin and Course Name	Montana Number	Elev.	Location			Record Began	Measuring Dates[a]	Measured By:[b]
			Sec. Lat.	Twp.	Range Long.			
JEFFERSON RIVER								
(ROCK-BEAVERHEAD)								
Lakeview Ridge	11E3	7400	27	14S	2W	1948	3,4,5	9
Lakeview Canyon	11E4	6930	26	14S	2W	1948	3,4,5	9
Limekiln	12E2	6950	5	15S	9W	1948	3,4	1
White Pine Ridge	12E1	8850	18	14S	9W	1948	3,4	1
(HORSE PRAIRIE)								
Bloody Dick	13D16	7600	12	8S	16W	1948	3,4	1
Cold Stone	13D9	8100	11	8S	16W	1948	3,4	1
Lemhi Pass	13E1	7480	9	10S	15W	1948	3,4	1
Terrell Creek	13D12	6650	14	9S	15W	1948	3,4	1
Trail Creek	13E2	7090	15	10S	15W	1948	3,4	1
Selway Junction	13D11	6800	27	8S	15W	1948	3,4	1
(BIG HOLE)								
Big Hole Pass	13D3	7440	28	3S	18W	1948	3,4	1
Big Hole Pass (Below)	13D4	6900	24	3S	18W	1948	3,4	1
East Boundary	13D5	6700	22	3S	17W	1948	3,4	1
Gibbons Pass	13D2	7100	4	2S	19W	1934	2,3,4,5	1,2
Jahnke Creed	13D8	7340	25	7S	16W	1948	3,4	1
Miner Forks	13D6	7300	24	6S	17W	1948	3,4	1
Miner Lake	13D7	6720	10	6S	16W	1945	3,4,5	1
(WISE RIVER)								
Anderson Mdw.	13D14	7000	18	3S	12W	1948	3,4	1
Elk Horn	13D15	8450	15	4S	12W	1934	3,4,5	2
Wise River	13D13	6300	15	2S	12W	1948	3,4	1
(RUBY RIVER)								
Cottonwood	11E2	5900	24	10S	3W	1948	3,4	1
Cottonwood (Upper)	11E1	8400	30	10S	2W	1948	3,4	1
Flashlight	12D3	6950	22	8S	7W	1945	3,4,5	1
Tobacco Root	12D2	6900	13	4S	3W	1948	3,4	1
Vigilante	11D1	6125	28	9S	3W	1948	3,4	1
MADISON RIVER								
Hebgen	11E5	6550	22	11S	3E	1934	1,2,3,4,5	2
West Yellowstone	11E7	6700	34	13S	5E	1934	1,2,3,4,5	2
Norris Basin	10E2	7500	44°-44'		110°-42'	1935	3,4	5,6
GALLATIN RIVER								
Devil's Slide	10D4	8100	14	5S	6E	1935	3,4,5	2,6
Hood Meadow	10D3	6600	22	4S	6E	1934	3,4,5	2,6
Mystic Lake	10D2	6600	30	3S	7E	1935	2,3,4	6,7
New World	10D1	6700	24	3S	6E	1939	2,3,4,5	6,7
21-Mile	11E6	7150	1	11S	5E	1934	1,2,3,4,5	2
MISSOURI RIVER MAIN STEM								
Cheesman Reservoir	12C5	6200	2	8N	5W	1936	1,2,3,4,5	2
Crystal Lake	9C1	6100	24	12N	17E	1941	3,4	1
Grasshopper	10C2	7000	19	9N	8E	1938	3,4	1
Kings Hill	10C1	7950	35	13N	7E	1937	3,4,5	2
Picnic Grounds	12C6	6500	22	5N	6W	1940	2,3,4	3
Pipestone Pass	12D1	7200	11	1N	7W	1938	2,3,4,5	1
Stemple Pass	12C1	6900	16	13N	7W	1934	3,4,5	2
Ten Mile Creek, Lower	12C2	6250	13	8N	6W	1935	1,2,3,4,5	2
Ten Mile Creek, Middle	12C3	6800	13	8N	6W	1934	1,2,3,4,5	2
Ten Mile Creek, Upper	12C4	8000	19	8N	5W	1935	1,2,3,4,5	2
TETON RIVER								
Freight Creek	12A1	6000	13	26N	10W	1948	3,4	1
Waldron Creek	12B2	5600	16	25N	9W	1948	3,4	1
West Fork	12B1	6000	6	25N	9W	1948	3,4	1
(SUN RIVER)								
Bench Mark	12B8	5500	9	20N	10N	1948	3,4	1
Cabin Creek	12B6	5400	33	23N	10W	1949	3,4	1
5-Bull	12B9	5600	36	20N	10W	1948	3,4	1
Catee Park	12B5	5300	31	24N	10W	1949	3,4	1
Goat Mountain	12B7	7000	20	22N	10W	1934	3,4	2
My Lake	13B9	7300	21	23N	12W	1950	3,4	1
Wrong Creek Ridge	12B3	6800	17	25N	10W	1949	3,4	1
Wrong Creek	12B4	5700	32	25N	10W	1949	3,4	1
(MARIAS RIVER)								
Marias Pass	13A5	5250	34	30N	14W	1936	1,2,3,4,5	2
Snow Lab. #16	13A9	5200	15	29N	14W	1947	1,2,3,4,5	2
(MILK RIVER)								
Rocky Boy	9A1	5200	15	28N	16E	1941	3,4	7
(MUSSELSHELL RIVER)								
Grasshopper	10C3	7000	19	9N	8E	1938	3,4	1
(UPPER YELLOWSTONE)								
Camp Senia	9D1	7890	2	8S	18E	1037	4	1
Canyon	10E3	7750	44°-44'		110°-30'	1938	1,2,3,4,5	12
Cooke City	10D7	7400	25	9S	14E	1937	1,2,3,4,5	5
Crevice Mt.	10D5	8400	29	9S	9E	1935	3,4	1
Independence	10D6	8000	22	7S	12E	1941	3,4	12
Lake Camp	10E4	7850	44°-34'		110°-24'	1937	1,2,3,4,5	12
Lupine Creek	10E1	7300	44°-54'		110°-37'	1938	1,2,3,4,5	5
(SHIELDS RIVER)								
Porcupine	10C3	6500	10	4N	10E	1938	3,4	1
LOWER YELLOWSTONE								
(Wind River) Wyoming								
Brooks Lake #3	10F2	9200	23	44N	110N	1939	2,3,4,5	12
Burroughs Creek	9F6	8800	15	43N	107W	1948	2,3,4,5	12
Dinwoodie	9F10	10000	9	38N	105W	1948	2,3,4,5	12
Dry Creek	9F9	9500	34	4N	105W	1948	2,3,4,5	12
DuNoir	9F2	8750	27	42N	108W	1940	2,3,4,5	12
Geyser Creek	9F3	8500	12	41N	106W	1948	2,3,4,5	12
Hobbs Park	9G2	10000	22	2S	3W	1948	2,3,4,5	12
Little Warm	9F4	9500	24	41N	108W	1948	2,3,4,5	12
Mosquito Park R.S.	9G3	9500	23	2S	3W	1940	2,3,4,5	12
Sheridan R.S.	9F1	7500	3	42N	109W	1939	2,3,4,5	12
St. Lawrence R.S.	9F11	9000	26	1N	4W	1940	2,3,4,5	12
T-Cross Ranch	9F5	8000	1	43N	107W	1940	2,3,4,5	12
Trout Creek	9G1	8400	5	2S	2W	1948	2,3,4,5	12
Togwotee Pass	10F1	9600	29	44N	110W	1936	2,3,4,5	10
(Popo Agie River) Wyoming								
Blue Ridge	8G2	9500	23	31N	101W	1939	2,3,4,5	12
Grannier Meadows	8G4	9000	19	30N	100W	1936	2,3,4,5	12
Larsen Creek	9G4	9000	12	30N	103W	1948	3,4,5	12
Sawmill Glade	8G1	8500	3	31N	101W	1939	2,3,4,5	12
South Pass	8G3	9000	13	30N	101W	1939	2,3,4,5	12

MISSOURI RIVER DRAINAGE CONT.

Drainage Basin and Course Name	Montana Number	Elev.	Location			Record Began	Measuring Dates[a]	Measured By:[b]
			Sec. Lat.	Twp.	Range Long.			
BIG HORN RIVER Wyoming								
Beavers Mill	9F8	8900	6	43N	102W	1948	2,3,4,5	12
Owl Creek	8F1	8700	36	43N	101W	1948	2,3,4,5	12
Tensleep R.S.	7E3	8300	30	49N	86W	1935	4,5	1
Timber Creek	9E2	8800	25	47N	103W	1948	4,5	12
Ranger Creek	7E1	8800	32	53N	88W	1935	4,5	1
Wood River	9F7	8000	28	46N	103W	1939	2,3,4,5	12
(SHOSHONE RIVER) Wyoming								
East Entrance	10E6	7000	17	52N	109W	1948	1,2,3,4,5	5
Sylvan Pass	10E5	7100	12	52N	110W	1936	1,2,3,4,5	5
TONGUE RIVER Wyoming								
Big Goose	7E2	7700	4	53N	86W	1935	2,3,4,5	1
Burgess Ranger Sta.	7E4	7900	36	56N	89W	1950	2,3,4,5	12
Dome Lake	7E5	8800	11	53N	87W	1950	2,3,4,5	12
Lodgepole	9E1	82[illegible]	32	56N	106W	1940	4,5	1
POWDER RIVER								
North Powder	7E8	8500	5	47N	85W	1951	2,3,4,5	12
Muddy Pass	7E7	9700	11	48N	85W	1950	2,3,4,5	1
Soldier Park	7E6	8700	36	51N	85W	1950	2,3,4,5	12
Sour Dough	6E1	8500	17	49N	84W	1936	2,3,4,5	1
Red Fork	7E1	7000	18	43N	85W	1936	2,3,4,5	12

COLUMBIA RIVER BASIN

Drainage Basin and Course Name	Montana Number	Elev.	Sec. Lat.	Twp.	Range Long.	Record Began	Measuring Dates[a]	Measured By:[b]
KOOTENAI RIVER								
Baree Mountain	15B1	6000	1	25N	31W	1937	4,5	1
Blue Bird Basin	14A1	6800	24	37W	26W	1937	4,5	1
Red Mountain	15A1	6000	4	36N	29W	1937	3,4,5	1
FLATHEAD RIVER								
Basin Creek	13B14	5000	11	19N	12W	1951	2,3,4,5	1
Big Creek	13B3	6750	6&7	22N	18W	1941	3,4,5	4
Brush Creek	14A4	5000	13	30N	26W	1937	3,4,5	1
Cattle Queen	13A1	4700	7	35N	17W	1939	3,4,5	5
Desert Mountain	13A2	5600	24	31N	19W	1937	1,2,3,4,5	1
HellRoaring Divide	14A3	5770	35	32N	22W	1942	3,4,5	1
Hulbrook	13B13	4530	18	21N	13W	1951	2,3,4,5	1
Kishenehn	14A2	4300	7	37N	21W	1946	4,5	5
Limestone Pass	13B8	7000	28	18N	12W	1948	3,4,5	1
Logan Creek	14A5	4300	34	30N	24W	1937	3,4,5	1
Marias Pass	13A5	5250	340	30N	14W	1934	1,2,3,4,5	2
Snow Lab. #16	13A9	5200	15	29N	14W	1946	1,2,3,4,5	2
Spotted Bear Mt.	13B2	7000	23	25N	15W	1948	3,4,5	1
Strawberry Lake	13B10	6500	11	28N	19W	1948	3,4,5	1
Trinkus Lake	13B1	6500	9	25N	17W	1948	3,4,5	1
Trout Lake #2	13B12	3600	21	28N	17W	1948	3,4,5	1
Upper Holland Lake	13B5	7000	28	20N	16W	1948	3,4,5	1
Twin Creeks	13B11	3580	14	26N	16W	1951	2,3,4,5	1
Quintonkon	13B13	3800	11	26N	17W	1951	2,3,4,5	1
UPPER CLARK FORK								
El Dorado Mine	13C9	7800	23	8N	12W	1946	4	11
Gold Creek Lake	13C8	7200	14	8N	12W	1946	4	11
Intergaard	13C4	6450	6	5N	13W	1939	2,3,4	3
North Fork Jocko	13B7	6330	3	17N	17W	1941	3,4,5	4
Picnic Grounds	12C6	6500	22	5N	6W	1940	2,3,4	3
Pipestone Pass	12D1	7200	11	1N	7W	1938	2,3,4,5	1
Rainy Lake	13B6	4300	11	18N	16W	1947	3,4,5	1
Slide Rock Mountain	13C2	7100	26	10N	16W	1937	4	1
Southern Cross	13C5	6500	9	5N	13W	1939	2,3,4	3
Stemple Pass	13C1	6900	16	13N	7W	1934	3,4,5	2
Storm Lake No. 2	12C7	7780	19	4N	13W	1939	4	1
Stuart Mill	13C6	6500	19	5N	13W	1939	2,3,4	3
Stuart Mountain #1	13C1	7400	6	14N	18W	1936	4	1
Coyote Hill	13B10	4200	12	18N	16W	1951	3,4,5	1
PEND OREILLE RIVER								
Baree Mountain	13B1	6000	1	25N	31W	1937	4,5	1
Freezeout Submit #2	15C10	6800	21	15N	27W	1951	4	1
Hoodoo Creek	13C1	6200	9&16	14N	27W	1937	4	1
BITTERROOT RIVER								
East Fork Ranger Stn.	13D1	5400	16	2N	17W	1937	4	1
Gibbons Pass	13D2	7100	4	2S	19W	1934	2,3,4,5	1
Mud Creek Pasture	14C1	4600	24	11N	24W	1937	3	1
Nesperce Camp	14D2	5580	19&20	1S	23W	1937	4	1
Nesperce Pass	14D1	6575	32	28N	16E	1937	4	1
Skalkaho Summit	13C3	7259	30	6N	17W	1937	4	1

SASKATCHEWAN RIVER BASIN

Drainage Basin and Course Name	Montana Number	Elev.	Sec. Lat.	Twp.	Range Long.	Record Began	Measuring Dates[a]	Measured By:[b]
ST. MARY RIVER								
Iceberg Lake	13A3	6000	48°-50'		113°-42'	1922	5	2,8
Piegan Pass #4	13A4	5000	48°-46'		113°-40'	1922	5	2,8
Piegan Pass #6	13A6	6500	48°-45'		113°-42'	1922	5	2,8
Mount Allen #7	13A7	7000	48°-44'		113°-40'	1922	5	2,8
Ptarmigan #8	13A8	5800	48°-50'		113°-42'	1922	5	2,8

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[a] Numerals 1,2,3,4, and 5 refer to January 1, February 1, March 1, April 1, and May 1

[b] Numerals refer to Agency that secures the snow survey as follows:

1. U.S. Forest Service
2. U.S. Geological Survey and U.S. Engineer Corps
3. Montana Power Company
4. U.S. Indian Service
5. National Park Service
6. Montana Experiment Station
7. City of Bozeman
8. Dominion Water and Power Bureau
9. U.S. Fish and Wildlife Service
10. U.S. Bureau of Reclamation
11. Deerlodge Citizens Committee
12. Soil Conservation Service

5,N-11,464-A

STORAGE IN RESERVOIRS OF MONTANA - February 1, 1953

MISSOURI RIVER BASIN - Montana

RESERVOIR	Location on or diversion from	Usable Capacity	Reservoir Volumes in 1,000's a.f.				
			1953	1952	1951	1950	10-yr. average 1943 - 1952
Lima Reservoir	Beaverhead	84.00	29.5	35.0	47.5	33.9	40.3
Ruby Reservoir	Ruby River	38.85	-	-	-	-	-
Willow Creek Res.	Willow Creek	17.76	-	-	-	-	-
Hebgen Lake	Madison River	345.00	178.5	390.8	239.2	207.6	231.4
Ennis Lake	Madison River	41.00	38.5	38.9	30.8	34.3	34.9
Lake Sewall	Missouri River	37.80	19.0	19.3	23.6	29.2	27.5
Hauser Lake	Missouri River	62.50	63.8	36.7		38.2	
Lake Helena	Missouri River	10.45	10.9	2.7	5.2	3.0	7.6
Holter Lake	Missouri River	81.92	79.3	63.7	45.6	68.0	59.0
Gibson Reservoir	N.Fk. Sun River	105.00	49.2	68.6	75.4	34.1	60.2
Willow Creek "	N.Fk. Sun River	32.30	19.9	23.1	23.1	2.5	16.1
Pishkun Reservoir	N.Fk. Sun River	32.00	18.0	23.6	19.0	19.2	19.7
Lower Two Med.Lake	Two Medicine "	14.00	0	0	0	0	0
Four Horns Lake	Badger Creek	20.00	9.2	8.6	-	5.9	7.8
Swift Reservoir	Birch Creek	30.00	8.7	20.8	24.9	16.7	21.8
Lake Francis	Dupuyer & Birch Cr.	112.00	95.5	93.4	93.8	81.7	95.2
Ackley Lake	Judith River	5.82	-	3.7	4.9	4.4	4.6
Durand Reservoir	N.Fk.Musselshell	7.01	-	-	5.4	6.2	5.1
Martinsdale "	S.Fk.Musselshell	23.10	-	-	12.8	9.9	11.2
Deadman Basin "	Musselshell River	52.50	-	-	-	-	
Fort Peck Res.	Missouri River	19,000,00	12,420.0	16,590.0	12,440.0	11,280.0	11,232.2
Fresno Reservoir	Milk River	127.20	76.8	83.4	68.6	8.3	58.3
Nelson Reservoir	Milk River	66.80	31.8	39.9	16.1	5.4	33.4
Mystic Lake	W.Rosebud Creek	20.80	9.1	10.4	11.9	10.9	12.3
Cooney Reservoir	Red Lodge Creek	27.50	-	8.6	10.7	10.7	7.1
Tongue River Res.	Tongue River	73.90	-	17.0	8.2	5.6	7.6
Sherburne Lake	Swiftcurrent Cr.	66.10	-	17.2	23.3	33.9	19.9

YELLOWSTONE RIVER BASIN - WYOMING

Buffalo Bill Res.	Shoshone River	456.60		266.4	305.9	221.1	302.5
Boysen Reservoir	Wind River	819.80		92.4	-	-	-
Pilot Butte "	Wind River	30.10		6.5	5.9	10.2	13.0
Bull Lake Reservoir	Wind River	155.00		74.7	99.4	15.0	69.3

STORAGE IN RESERVOIRS OF MONTANA - Feb. 1, 1953

COLUMBIA RIVER BASIN

RESERVOIR	Location on or diversion from	Reservoir Volumes in 1,000's Acre Feet					
		Usable Capacity	1953	1952	1951	1950	10-year average 1943 - 1952
Georgetown Lake	Flint Creek	31.00	21.6	24.6	25.16	18.79	24.66
Como Lake	Rock Creek	34.80	-	11.0	22.50	13.86	12.59
Hungry Horse Reservoir	So.Fk.Flathead	3,000.00	671.1	61.4	-	-	-
Flathead Lake	Flathead River	1,791.00	961.7	1,182.0	1,107.0	958.1	999.6
Little Bitterroot	*Little Bitterroot	36.10	28.5	35.7	33.3	26.5	17.8
Dry Fork Reservoir	*Dry Fork Creek	6.70	3.8	4.1	4.9	3.4	2.2
Mission Valley Res.	**Flathead Irr.Proj.	98.60	24.3	43.9	44.1	24.0	32.1
Lower Jocko Lake	Jocko Creek	7.6	Sno Bound	0.1	Sno Bound	Sno Bound	Sno Bound

* Sum of two reservoirs on Little Bitterroot
* Sum of two reservoirs on Dry Fork Creek
** Sum of (8) eight reservoirs on Project

PRECIPITATION DATA FOR February 1, 1953
MONTANA

Station	Elevation	1952 Current Precipitation Oct.	Nov.	Dec.	1953 Jan.	January Dept. from Normal	Accumulated Precipitation 1952-53	Normal	Departure
WEST OF DIVIDE									
Fortine	3000	.05	0.28	0.87	-	-	-	5.72	-
Butte (Airport)	5533	.06	0.75	0.24	0.73	0.33	1.78	2.05	-0.27
Phillipsburg	5280	T	1.07	0.28	1.27	0.48	2.62	3.28	-0.66
Hamilton	3529	.11	0.64	0.27	1.60	0.81	2.26	3.22	-0.96
West Glacier	3154	.08	0.68	2.43	7.07	4.14	10.25	11.32	-1.07
Summit (Marias)	5213	.75	1.63	3.12	14.00	10.58	19.50	11.69	7.81
Ovando 1 SW	4101	.13	0.65	1.16			-	6.10	-
Trout Creek	2485	.26	0.37	3.42	13.14	9.45	17.19	13.87	3.33
Thompson Falls	2435	.13	0.38	1.03	7.30	5.29	8.84	8.25	0.59
Average (9)		.17	0.72	1.42	6.40	4.44	8.92	7.27	1.65
CENTRAL DIVISION									
Babb	4300	.41	0.96	0.08	2.24	1.30	3.69	4.05	-0.36
Havre	2488	.01	0.42	0.12	0.26	-0.47	0.81	2.62	-1.81
Great Falls (Airport)	3664	.16	1.36	0.08	0.55	-0.06	2.15	2.80	-0.65
Helena (Airport)	3893	.35	1.05	0.28	0.51	-0.05	2.19	2.09	0.10
Lewistown (Airport)	4132	.37	0.65	0.08	0.44	-0.29	1.54	1.50	0.04
Livingston	4485	.18	0.52	0.18	0.50	-0.04	1.38	3.11	-1.73
Wisdom	6058	.13	0.35	0.43	1.46	-0.66	2.37	3.22	-0.85
West Yellowstone	6669	.11	0.68	2.23	2.20	-0.61	5.22	8.04	-2.82
Mystic Lake	6558	.19	1.48	0.47	1.60	0.46	3.74	5.60	-1.86
Average (9)		.17	.83	0.44	1.08	0.10	2.56	3.67	-1.11
EASTERN DIVISION									
Malta	2255	.01	0.18	0.26	0.50	-0.03	.95	2.07	-1.12
Fort Peck	2180	T	0.04	0.11	0.21	-0.17	.36	1.88	-1.52
Medicine Lake	1962	.11	0.10	0.08	0.70	0.39	.99	1.67	-0.68
Circle	2428	.03	0.17	T	0.11	-0.56	.31	2.84	-2.53
Billings #2	3139	.47	0.32	0.15	0.36	-0.27	1.30	3.18	-1.88
Miles City	2392	.01	0.61	0.11	0.70	0.04	1.43	2.76	-1.33
Glendive	2076	.02	0.58	0.05	0.17	-0.35	.82	2.32	-1.50
Broadus	3026	.04	T	0.06	0.85	0.35	.95	2.63	-1.68
Average (8)		.08	0.25	0.10	0.45	-0.07	.89	2.42	-1.53

*Note: Figures without a minus sign (-) are plus.

PRECIPITATION DATA FOR February 1, 1953
NORTHERN WYOMING

Station	Elevation	1952			1953	January Dept. from Normal	Accumulated Precipitation		
		Current Precipitation							
		Oct.	Nov.	Dec.	Jan.		1952-53	Normal	Departure
BIG HORN RIVER BASIN									
Cody	4984	.03	0.21	0.02	0.14	-0.17	0.40	2.16	-1.76
Lovell	3825	.00	0.19	0.11	0.12	-0.15	.42	1.88	-1.42
Worland	4061	.00	0.16	0.08	-	-	-	-	-
Sunshine 4 SW	6930	.36	1.94	0.18	-	-	-	-	-
Thermopolis	4556	.02	0.30	0.06	0.80	+0.42	1.18	2.95	-1.77
Riverton	4954	.16	0.14	0.06	0.56	+0.33	.92	2.24	-1.32
Dubois	6917	.03	0.39	0.41	0.42	0.00	1.25	2.49	-1.24
Average (7)		.08	0.47	0.13	.26	-0.09	0.83	2.34	-1.51
TONGUE RIVER BASIN									
Sheridan	4021	.22	0.27	0.50	1.14	+0.44	2.13	3.89	-1.76
POWDER RIVER BASIN									
Arvada	3680	.19	0.19	0.65	0.69	+0.36	1.72	2.61	-0.89
Metz Ranch	5280	.02	0.04	0.23	0.40	-0.03	0.69	2.63	-1.94
Gillette	4542	.18	0.70	0.86	0.62	+0.17	2.36	3.43	-1.07
Nine Mile Creek	5000	.10	0.40	0.27	-	-	-	-	-
Mid West	4850	.10	1.02	0.12	0.74	+0.24	1.98	3.31	-1.33
Average (5)		.12	0.47	0.43	0.61	+0.18	1.69	3.00	-1.31

*Note: Figures without a minus sign (-) are plus.

MONTANA SNOW SURVEYS - February 1, 1953

MISSOURI BASIN DRAINAGE BASIN AND SNOW COURSE **	No.	Elev.	Date of Survey 1953	Snow Depth (In.) 1953	Water Content (Inches)							Years
					Feb. 1 1953	Past Records				Average Data February 1		
						1952	1951	1950	1949	Avg.	% Avg.	
JEFFERSON RIVER												
(Rock-Beaverhead)												
Lakeview Ridge	11E3	7400	1/30	25	6.6			8.6		6.6	100	3
Lakeview Canyon	11E4	6930	1/30	32	9.5			12.0		8.6	110	3
*Kilgore	11E12	6200										
*Camp Creek	12E3	6800	2/1	30	9.6	15.5	4.5	9.6	5.7	4.6	150	18
*Blue Ledge Mine	11E11	6700										
(Big Hole)												
*Moose Creek	13D16	6200										
MADISON RIVER												
Hebgen	11E5	6550	1/27	29	7.3	14.0	5.4	7.7	11.1	8.3	88	19
West Yellowstone	11E7	6700	1/28	26	6.8	13.9	8.0	9.9	9.7	7.7	88	16
21-Mile	11E6	7150	1/28	40	11.2	21.6	10.6	14.5	14.2	11.2	100	16
*Big Springs	11E9	6500	1/28	52	14.5	24.0	13.0	14.9	15.1	12.9	112	18
*Island Park	11E10	3600	1/29	44	11.1	19.7	9.1	12.8	11.6	10.1	100	18
*Valley View	11E8	6500	1/29	38	9.7	19.5	7.4	12.0	10.7	10.1	96	8
GALLATIN RIVER												
Devil's Slide	10D4	8100	2/1	40	10.3							1
Hood Meadow	10D3	6600	1/31	17	3.5							1
New World	10D1	6700	2/7	20	5.7	9.8	6.1	3.2	8.3	7.6	75	6
21-Mile	11E6	7150	1/28	40	11.2	21.6	10.6	14.5	14.2	11.2	100	16

*Adjacent Basin

MONTANA SNOW SURVEYS - February , 1953

MISSOURI BASIN DRAINAGE BASIN AND SNOW COURSE **	No.	Elev.	Date of Survey 1953	Snow Depth (In.) 1953	Water Content (Inches)							Years
					Feb. 1 1953	Past Records				Average Data Feb. 1		
						1952	1951	1950	1949	Avg.	%Avg.	
MISSOURI RIVER MAIN STEM												
Chessman Reservoir	12C5	6200	1/30	12	3.0	11.6	3.1	3.4	4.4	3.2	94	18
Picnic Grounds	13C6	6500	2/2	13	3.8	4.3	4.7	2.1	3.9	3.3	115	9
Pipestone Pass	12D1	7200	1/30	17	3.0	3.1	3.0	1.4	5.2	2.9	103	14
Tenmile, Lower	12C2	6250	2/1	21	4.9	5.8	5.5	4.6	6.3	4.6	106	18
Tenmile, Middle	12C3	6800	2/2	30	7.6	8.2	8.2	6.9	8.7	6.6	115	19
Tenmile, Upper	12C4	8000	2/1	34	9.0	10.4	10.0	8.4	10.6	8.3	108	19
(Marias River)												
Marias Pass	12B5	5250	2/2	38	12.2	16.6	13.7	20.6	12.6	11.6	105	19
UPPER YELLOWSTONE												
Canyon	10E3	7750	1/31	38	8.9	10.6	8.7	11.6	10.2	9.5	94	8
Cooke City	10D7	7400	1/31	26	5.7	7.3	5.2	4.3	6.7	5.7	100	7
Lake Camp	10E4	7850	1/31	26	5.7	9.0	6.7	8.1	8.4	6.3	91	8
Lupine	10E1	7300	1/31	22	5.3	11.1	6.4	7.4	8.6	6.4	83	12
*Lewis Lake Divide	10E9	7000	1/31	103	31.2	37.0	32.3	35.2	39.8	30.4	103	35
*Astor Creek	10E8	7700	1/31	84	24.5	20.9	24.5	16.9	19.2	15.6	157	34
LOWER YELLOWSTONE												
(Wind River - above Div.Dam)												
Brooks Lake #3	10F2	9200	1/24	54	15.6	19.4	23.4	22.6	21.3	17.0	92	13
Burroughs Creek	9F6	8800	1/26	47	11.5	8.7	19.0	15.3	9.8	12.9	89	5
Du Noir	9F2	8750	1/24	23	5.2	5.8	8.0	10.7	5.8	6.6	79	12
Geyser Creek	9F3	8500	1/25	22	4.9	5.3	7.7	8.0	6.3	6.4	77	5
Little Warm	9F4	9500	1/25	38	10.3	12.4	19.3	18.9	-	15.2	68	4
Sheridan	9F1	7500	1/24	28	6.5	6.0	8.4	7.0	6.6	5.8	118	12
T-Cross Ranch	9F5	8000	1/26	28	6.3	3.4	8.0	5.6	5.8	5.1	123	13
*Togwotee Pass	9F1	9600	2/2	67	18.7	20.8	23.9	20.4	20.9	18.5	101	18
Dinwoodie	9F10	10000	1/23	32	7.1	10.1	11.9	13.4	9.2	10.3	69	5
Dry Creek	9F9	9500	1/23	20	3.7	4.1	5.6	8.2	5.1	5.3	70	5
Hobbs Park	9G2	10000	1/29	32	8.9	15.8	9.9	21.4	12.8	13.8	65	5
Mosquito Park	9G3	9500	1/29	18	4.8	4.7	4.7	10.2	6.3	6.5	74	10
St. Lawrence	9F11	9000	1/30	16	4.1	5.4	3.1	7.9	6.6	5.0	82	10
Trout Creek	9G1	8400	1/29	14	3.6	3.2	1.2	5.2	5.7	3.8	95	5

*Adjacent Basin

MONTANA SNOW SURVEYS - February 1, 1953

MISSOURI BASIN DRAINAGE BASIN AND SNOW COURSE **	No.	Elev.	Date of Survey 1953	Snow Depth (In.) 1953	Water Content (Inches) Feb. 1 1953	Past Records 1952	1951	1950	1949	Average Data Feb. 1 Avg.	%Avg.	Years
POPO AGIE RIVER												
Blue Ridge	8G2	9500	1/28	24	6.4	12.1	7.9	14.3	10.4	7.9	81	12
Grannier Meadows	8G4	9000	1/28	29	8.2	13.0	10.3	16.2	-	9.5	86	11
Sawmill Glade	8G1	8500	1/28	19	4.2	5.7	3.5	8.3	6.7	4.9	84	12
South Pass	8G3	9000	1/28	31	8.8	14.3	11.2	15.5	9.8	9.4	94	12
BIG HORN RIVER (Wyoming)												
Beavers Mill	9F8	8000	1/27	20	5.3	3.2	6.3	6.5	5.5	5.4	98	5
Owl Creek	8F1	8700	1/28	14	3.2	4.3	4.0	4.8	4.2	4.3	77	5
Wood River	9E7	8000	2/2	13	2.5							1
SHOSHONE RIVER												
East Entrance	10E6	7000	1/30	28	6.7	11.0	9.4	8.6	10.7	9.3	72	5
Sylvan Pass	10E5	7100	1/30	25	7.8	12.2	11.4	12.1	10.9	10.6	74	10
TONGUE RIVER												
Burgess Junction	7E4	7900										
Big Goose	7E2	7700										
Dome Lake	7E5	9000										
POWDER RIVER												
Sour Dough	6E1	8500										
North Powder	7E8	8500										
Soldier Park	7E6	8700										
Muddy Pass	7E7	9700										
FLATHEAD RIVER												
Basin Creek	13B14	5000	1/30	21	6.4	9.5	7.4			7.8	82	3
Desert Mountain	13A2	5600	1/30	37	9.2	15.2	11.9	13.7		10.6	87	7
Holbrook	14B13	4530	1/30	25	7.2	6.4						2

MONTANA SNOW SURVEYS - February 1, 1953

COLUMBIA RIVER BASIN

DRAINAGE BASIN AND SNOW COURSE **	No.	Elev.	Date of Survey 1953	Snow Depth (In.) 1953	Water Content (Inches)							Years
					Feb. 1 1953	Past Records				Average Data Feb. 1		
						1952	1951	1950	1949	Avg.	%Avg.	
FLATHEAD RIVER (Con't.)												
Marias Pass	13A5	5250	2/2	38	12.2	16.6	13.7	20.6	12.6	11.6	105	19
Quintonkon	13A13	3800	1/28	37	8.3	15.4	12.6			12.1	68	3
Rainy Lake	13B6	4300	2/2	32	9.6	12.7		11.4	9.4	9.4	102	6
Twin Creeks	13B11	3580	1/29	28	8.4	10.9	9.1			9.4	90	3
Upper Holland Lake	13B5	7000	1/27	72	19.8							1
UPPER CLARK FORK												
Coyote Hill	13B11	4200	2/2	29	8.2	10.4						2
Chessman Reservoir	12C5	6200	1/30	12	3.0	4.6	3.1	3.4	4.4	3.2	94	18
Intergaard	13C4	6450	2/2	24	5.6	6.7	6.2	4.7	5.6	5.2	108	9
Picnic Grounds	13C6	6500	2/2	13	3.8	4.3	4.7	2.1	3.9	3.3	115	9
Pipestone Pass	12D1	7200	1/30	17	3.0	3.1	3.0	1.4	5.2	2.9	103	14
Rainy Lake	13B6	4200	2/2	32	9.6	12.7	--	11.4	9.4	9.4	102	6
Southern Cross	13C5	6500	2/2	19	5.1	6.1	4.6	5.2	4.2	3.9	130	9
Storm Lake #2	12C7	7780	1/24	34	7.8							1
Stuart Mill	13C6	6500	2/2	18	4.6	5.3	5.2	3.4	4.5	4.4	104	9
Tenmile, Lower	12C2	6250	2/1	21	4.9	5.8	5.5	4.6	6.3	4.6	106	18
Tenmile, Middle	12C3	6800	2/2	30	7.6	8.2	8.2	6.9	8.7	6.6	115	19
Tenmile, Upper	12C4	8000	2/1	34	9.0	10.4	10.0	8.4	10.6	8.3	108	19
*Lookout	15B2	5250	1/29	79	22.4	32.4	27.3	30.9	28.2	22.1	101	17

*Adjacent Basin

MONTANA SNOW SURVEYS - February 1, 1953

COLUMBIA RIVER BASIN

DRAINAGE BASIN AND SNOW COURSE **	No.	Elev.	Date of Survey 1953	Snow Depth (In.) 1953	Water Content (Inches)							Years
					Feb. 1 1953	Past records				Average Data Feb. 1		
						1952	1951	1950	1949	Avg.	%Avg.	
KOOTENAI												
Fernie	Canada	3500	1/29	28	7.8	8.9	7.6	11.7	6.8	6.3	126	14
New Fernie	Canada	4100	1/30	46	11.9	12.3	10.4			11.5	104	3
Fernie Ridge	Canada	5600										
Marble Canyon	Canada	5000	1/31	51	13.5	10.0	19.9	12.9	7.9	11.8	115	6
Nelson Creek	Canada	3050	1/30	44	13.3	12.9	11.1	9.9	14.6	10.0	133	15
Sinclair Pass	Canada	6000	2/3	16	3.8	5.3	5.1	5.2	3.2	4.6	83	6
Smith Creek	16A1	4800										
Sullivan Mine	Canada	5100	1/30	40	10.3	12.7	8.4	11.5	9.0	10.1	102	8
Gray Creek	Canada	3500	1/31	43	12.4	12.6	13.5	12.5	12.1	12.6	99	5
BITTERROOT												
Gibbons Pass	13D2	7100	1/30	71	16.6	20.0	16.9	17.2		14.9	112	14
*Moose Creek	13D16	6200	2/4	56	15.6	13.9	--	11.4	13.4	10.7	145	8

*Adjacent Basin

Federal - State - Private

COOPERATIVE SNOW SURVEYS

Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"WATER IS THE WEST'S GREATEST RESOURCE"